REMARKS

Status of the Claims

Claims 2 – 4, 7 – 11, 16 – 18, and 24 – 30 are pending, with claim 24 being independent. Applicant respectfully requests the Examiner to reconsider and withdraw the outstanding rejections in view of the following remarks.

Claim Rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)

Claims 2, 24, and 29 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,080,397 ("Derr"). Claims 3, 4, 7 – 11, 16 – 18, 25 – 28, and 30 are rejected under 35 U.S.C. § 103(a) as being obvious over Derr. Claims 3, 4, 7 – 11, 16 – 18, 25 – 28, and 30 are dependent upon claim 24 and thus recite further limitations. Applicant respectfully disagrees with these rejections; therefore, the rejections are traversed.

Derr discloses upgrading of 350°F plus product of Fischer-Tropsch Synthesis by hydrotreating the Fischer-Tropsch Synthesis product and selective cracking the hydrotreated material boiling above about 600°F. In the process of Derr, a feed comprising oxygenates is introduced to the process by a conduit ***after indirect heat exchange*** in process equipment, not shown in the Figures, to raise the temperature thereof to about 470°F. The ***preheated feed is admixed with hydrogen rich make up gas*** alone or in combination with recycle hydrogen rich gas. The preheated mixture is then passed to ***a furnace*** wherein the charge mixture is raised to an elevated temperature within the range of about 550°F up to about 675°F (i.e., reaction temperature). Derr discloses that it is important to limit vaporization of the feed to less than about 85% vaporization to prevent fouling and plugging of the furnace tubes due to polymerization of the olefinic and/or di-olefinic hydrocarbons contained therein. Derr discloses that the hydrogen rich gas may be added to the pre-heated stream ***upstream of the furnace*** to help to reduce or minimize the ***fouling of the furnace tubes or coils*** and effect a regulation of the temperature therein so that from about 15 to 25 percent by weight of the feed is retained in the liquid phase (i.e., vaporization is limited to less than about 85%, as indicated desirable above). (Col. 11, lines 13 – 35).

In contrast, the presently claimed invention relates to a process for minimizing formation of heavy molecular weight products from reactive oxygenate and hydrocarbon

unsaturates in a hydroconversion feed stream during heating prior to the hydroconversion process. The presently claimed process involves adding a hydrogen containing gas stream to the hydroconversion feed stream ***prior to any heating*** of the stream.

In the presently claimed process, a ***first hydrogen-containing gas*** is added to the hydrocarbon stream not under hydroconversion conditions, wherein the first hydrogen-containing gas is sufficient to reduce the amount of heavy molecular weight products formed ***during heating*** as compared to a heated hydrocarbon stream without added hydrogen, to form a mixed stream. After the first hydrogen-containing gas is added, the mixed stream is ***then heated***. The first hydrogen-containing gas is added to reduce the amount of heavy molecular weight products formed during heating, which ***protects the pre-heat equipment*** in the hydroconversion process. The pre-heat equipment includes shell and tube heat exchangers. As such, the present specification specifies that a stream of hydrogen-containing gas sufficient to retard the polymerization of reactive species, including olefins and alcohols, and ***prevent fouling of the pre-heat equipment*** is added to a hydrocarbon stream containing the reactive species ***before pre-heating*** upstream of a hydroprocessing reactor. The ***hydrocarbon stream is then pre-heated*** and processed as known in the art (Page 2, Line 34 – Page 3, Line 5).

To the heated mixed stream is added a ***second hydrogen-containing gas*** sufficient to effect hydroconversion of the mixed stream, to form a hydroconversion feed stream. The hydroconversion feed stream is then heated to reaction temperature, and the hydroconversion feed stream is hydroconverted.

Applicants respectfully submit that upon reading the claimed steps in order, it is evident that the first hydrogen-containing steam is added to the hydroconversion feed stream ***prior to any heating*** of the stream (i.e., prior to pre-heating). The second hydrogen-containing gas is then added to the heated mixed stream (i.e., the pre-heated stream) forming a hydroconversion feed stream, and the hydroconversion feed stream is ***heated to reaction temperature*** for the hydroconversion.

To anticipate a claimed invention under §102, a reference must teach each and every element of the claimed invention. *See Lindeman Machinenfabrik GmbH v. American Hoist and Derrick Company*, 221 USPQ 481, 485 (Fed. Cir. 1984).

Applicants respectfully submit that Derr does not disclose or suggest all the claim limitations of the presently claimed invention. As described above, Derr discloses ***preheating a feed*** and then ***admixing the preheated feed*** with hydrogen rich gas. Accordingly, Applicants respectfully submit that Derr does not disclose or suggest adding a ***first hydrogen-containing gas*** to a hydrocarbon stream ***before pre-heating***. As such, Applicants respectfully submit that Derr does not disclose or suggest adding a ***first hydrogen-containing gas*** to a hydrocarbon stream, not under hydroconversion conditions, wherein the first hydrogen-containing gas is sufficient to reduce the amount of heavy molecular weight products ***formed during heating*** as compared to a heated hydrocarbon stream without added hydrogen, to form a mixed stream and ***then heating*** the mixed stream. Applicants further respectfully submit that Derr does not disclose or suggest adding a ***second hydrogen-containing gas*** to the heated mixture sufficient to effect hydroconversion of the mixed stream, to form a hydroconversion feed stream and then heating the hydroconversion feed stream to reaction temperature.

As Derr does not teach each and every element of the claims, it cannot anticipate the presently claimed invention. Accordingly, withdrawal of the rejection under 35 U.S.C. § 102(b) is respectfully requested.

Claims 3, 4, 7 – 11, 16 – 18, 25 – 28, and 30 are dependent upon claim 24, and thus recite further limitations. As detailed above, in no way does Derr disclose or suggest the presently claimed process of independent claim 24. Therefore, in no way does Derr disclose or suggest the process as recited in claims dependent thereon (i.e., claims 3, 4, 7 – 11, 16 – 18, 25 – 28, and 30).

Accordingly, withdrawal of the rejections under 35 U.S.C. § 102(b) and § 103(a) are respectfully requested.

Conclusion

For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims. In view of the foregoing remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited.

The Examiner is invited to contact the undersigned at the below-listed telephone

number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted,

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